

Field Report

Merritt Island National Wildlife Refuge

■ 1.0 Summary

Located on the east coast of Florida, Merritt Island National Wildlife Refuge (NWR) is unique in its connection to one of the most fascinating events of United States history. Merritt Island NWR, although managed by the U.S. Fish and Wildlife Service, is owned by NASA and shares its land with the Kennedy Space Center (KSC). The Canaveral National Seashore is to the north and east of the refuge and the bedroom community of Titusville, Florida is to the west of the refuge.

Visitors to the refuge are able to drive Black Point Wildlife Drive to view the local wildlife and migratory bird species that inhabit the refuge. During peak birding season weekends, the one-way, seven-mile Wildlife Drive is often congested with visitors trying to get a glimpse of the wildlife. Despite its worldwide popularity for wildlife viewing, very few of the visitors to Kennedy Space Center make a special trip to the refuge. The city of Titusville, with its redevelopment and eco-tourism efforts, along with the Canaveral National Seashore and the Kennedy Space Center would like to connect local attractions, including the refuge, through a joint transit system. The refuge, while not currently overburdened, would be able to welcome more visitors if their primary mission of maintaining wildlife habitats can continue to be met and if they are able to expand the visitor center to accommodate more people. Figure 1 shows a view of the refuge from the Kennedy Space Center bus tour.

Figure 1. View of Merritt Island NWR from KSC Bus



Transit alternatives that may help the refuge manage an increase in visitation while providing a joint visitor experience may include:

- A loop tram or shuttle on Black Point Wildlife Drive;
- A shuttle system from the planned Titusville Visitor Center and business incubator for recreational outfitters to designated recreation areas on the refuge;
- A shuttle system from KSC to the refuge Visitor Center;
- A ferry shuttle and tour of wetlands with stops at Canaveral National Seashore, KSC and Titusville Space Walk; and
- A rail transit system tour of the refuge with stops at Canaveral National Seashore and KSC. While this is possible given the infrastructure available on the KSC and refuge, the capacity needed for such a system may be too great for the refuge to accommodate.

■ 2.0 Background Information

2.1 Location

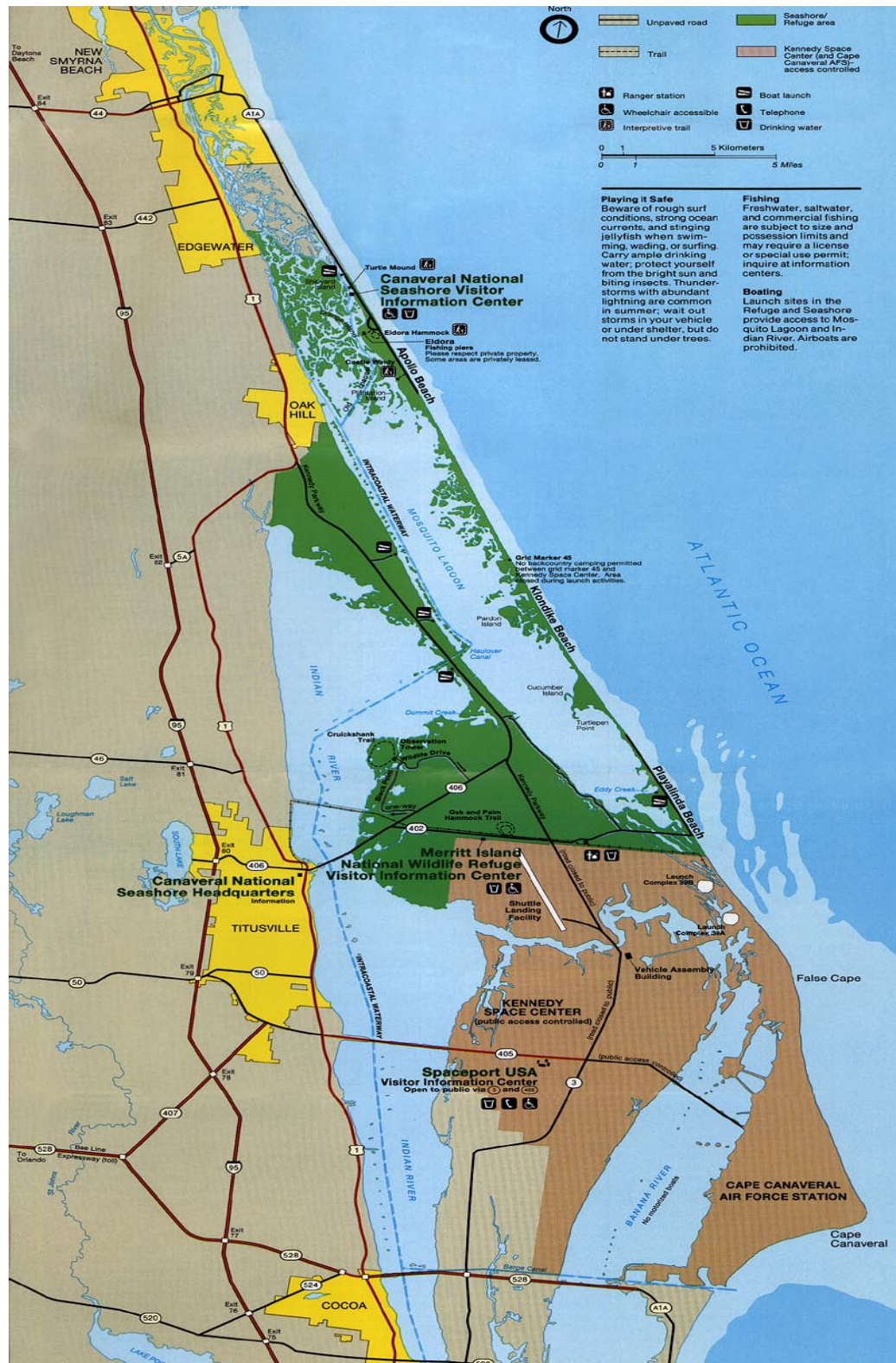
The Merritt Island National Wildlife Refuge is located east of Titusville, Florida on the Atlantic Ocean. The refuge provides a natural buffer for the NASA Kennedy Space Center, which occupies the southern portion of the island, along with the Canaveral Air Force Station. Also located on the island, the Canaveral National Seashore borders the refuge to the north and the east. Figure 2 shows the location of Merritt Island NWR in relationship to the Canaveral National Seashore and the Kennedy Space Center.

2.2 Administration and Classification

The refuge was established in 1963 after NASA's acquisition of the island was complete. Portions of the island not critical to the operation of the space center were turned over to the management of the USFWS. The 140,000 acres of the refuge are an overlay of the Kennedy Space Center.

Other refuges administered through the Merritt Island NWR include Archie Carr NWR, Lake Wales Ridge NWR, Pelican Island NWR, and St. Johns NWR.

Figure 2. Map of Merritt Island NWR



2.3 Physical Description

Although bordered by the Canaveral National Seashore and the Kennedy Space Center, the 140,000 acres of the refuge are accessible from the mainland by one bridge from Titusville, Florida. State Route 406 connects to SR 402 and SR 3 once it crosses the Indian River. These three roads create a triangle of activity from which the refuge activities center. Black Point Wildlife Drive, the refuge's main attraction, is accessible from SR 406, the refuge visitors center, as well as Klondike and Playlinda Beaches are accessible from SR 402 and the Mosquito Lagoon boat launches, Haulover Canal, and the Manatee Viewing Area are accessible from SR 3.

About half of the refuge consists of brackish estuaries and marshes. The other half of the refuge includes coastal dunes, scrub oaks, pine forests and flatwoods, and palm and oak hammocks. Over 500 species of wildlife live within the seven distinct habitats of the refuge. Because of its location between the subtropical and temperate climatic zones, the refuge is ideal as a wintering area for migratory birds.

2.4 Mission and Goals of the National Wildlife Refuge

The mission of the refuge is two fold: to preserve wildlife habitats and educate the public about wildlife and wildlife preservation. The goal to provide a visitor experience through education and observation is often in conflict with the goal to preserve habitats. The specific objectives of the Merritt Island NWR are:

- Provide habitat for migratory birds;
- Provide habitat and protection for endangered and threatened species;
- Provide Habitat for natural wildlife diversity;
- Provide opportunities for environmental education and interpretation, and wildlife-oriented recreation.

2.5 Visitation Levels and Visitor Profile

Excluding the visitation to the refuge display at the Kennedy Space Center, the refuge averages 500,000 annual visitors. Approximately 60,000 of these visitors come to the Visitor Information Center, 150,000 visitors use Black Point Wildlife Drive and 160,000 visitors are fishermen.

Titusville and Brevard County's efforts to market the area as a major eco-tourism attraction have gained worldwide attention. An Internet survey ranked Merritt Island NWR as one of the best international places to view wildlife. Seven percent of the refuge visitors are from international locations; the most frequent international visitors are European, with an increasing number from South America. However, the origin of most visitors coming to the refuge is difficult to determine because so much of the refuge use is unsupervised.

The refuge has a variety of public use opportunities including an educational experience at the Visitor Information Center, the seven-mile auto tour on Black Point Wildlife Drive, bird watching, hiking trails, manatee observation, fishing, waterfowl hunting, boating and canoeing. The refuge calendar of annual events includes Migratory Bird Day, Annual Beach Clean-up, National Fishing Week, National Wildlife Refuge Week, and a Christmas Bird Count. Figure 3 shows the observation tower and hiking trail off Black Point Wildlife Drive.

In addition to the activities managed directly by the refuge, the Kennedy Space Center offers wildlife education opportunities that include a static display about the refuge in the KSC visitor center in addition to an experimental bus tour into the wildlife refuge. Although the full extent of the Wildlife Tour offered by the KSC is yet to be achieved, the KSC is interested in increasing knowledge of, and visitation to, the refuge. Currently, few KSC visitors make a separate trip to the refuge. Other collaborative activities of the refuge with neighboring agencies include special events such as the Space Coast Flyway Festival.

Figure 3. Observation Tower (left) and Hiking Trail to Tower (right)



Due to constraints on the size of the visitor center and issues of compatible public use, the refuge staff feels it is unable to accommodate a substantial increase in visitors.

■ 3.0 Existing Conditions, Issues and Concerns

While Merritt Island NWR and NASA Kennedy Space Center (KSC) are inextricably linked, their visitor types, visitation levels, and issues and concerns vary. The Kennedy Space Center would like to engage visitors in activities on the refuge, but they are limited by the distance of the KSC visitor center and the refuge center in addition to the visitor capacity constraints of the refuge.

3.1 Transportation Conditions, Issues and Concern

Automobile access to the refuge is available via SR 406 to the east of Titusville, Florida, or from U.S. 1 through the small town of Oak Hill from the north. From the south of the refuge, roads have restricted access due to the sensitivity of NASA activities. Within the refuge boundaries, the road circulation is poor and the refuge tries to keep the refuge activities and traffic in the triangle of State Routes 406, 402 and 3. There is also a bicycle trail from Titusville that connects to a portion of the refuge.

Once on the refuge, visitors can bicycle, walk, or drive in the refuge. In addition the parking shortages at the visitor center, Black Point Wildlife Drive gets congested particularly on peak-season weekend days. Bird watchers are able to stop along Black Point Wildlife Drive, but the road is too narrow to pull off to the side of road and permit other users to continue on the one-way road. It is common for Wildlife Drive to experience bumper-to-bumper traffic on peak-season weekends. Birders also stop in traffic lanes of paved roads in the refuge, which they frequently do without regard for other traffic.

Approximately 20,000 people who commute through Titusville to KSC cause some conflicts on the refuge and in Titusville during rush hours.

With such a strong connection to KSC, the refuge has been involved in discussion about a shared transit system with the KSC visitor center and Canaveral National Seashore. As part of that discussion, they have identified the potential of using the existing NASA railroad system to connect the three visitor centers via fixed guideway transit. Figure 4 shows a stop for the Kennedy Space Center bus tour and the railroad tracks in use by KSC.

The KSC operates its own internal bus system for visitors and has made an attempt to make a greater connection to the refuge. The experimental Wildlife Tour includes one bus per day into areas of the refuge to which regular refuge visitors do not see. The wilderness experience is offered to KSC visitors for an additional charge.

Figure 4. Kennedy Space Center Bus System (left) and Existing Railroad Tracks (right)



3.2 Community Development Conditions, Issues and Concerns

The city of Titusville, as a gateway to Merritt Island NWR, Canaveral NS and the KSC, is a unique coastal community without a beach within the city limits. Titusville has traditionally been a bedroom community for, and is severely affected by the activities of, NASA. Built up in the early 1960s, Titusville went from a small town with a population of 3,000 people to a city of 30,000 people by the mid-1960s. Since that time, the population of Titusville has fluctuated with the size and stability of the space program at KSC.

The city of Titusville recognizes its survival is dependent on the space program and has plans to continue to capitalize on the popularity of the KSC as a tourist destination. The city has created public spaces in downtown Titusville that include local parks such as the Space Walk, which commemorates all NASA employees that were involved in the space program. The Space Walk park is shown in Figure 5.

Figure 5. Mercury 7 Monument at Titusville Space Walk Park



In addition to encouraging local visitors to stay overnight in the area, the city is also working with developers to create new attractions and services within the city for visitors to use during their stay in the area. The city, in conjunction with developers, is looking at the possibilities for a small convention center; a city visitors center with displays and transit to the national seashore, refuge and KSC; and a small business incubator for recreational outfitters who would use the seashore and refuge areas for their activities.

Other local activities include studies of two separate Maglev demonstration projects that would connect Orlando, Port Canaveral, KSC, and the Spaceport Executive Airport in Titusville.

3.3 Natural or Cultural Resource Conditions, Issues and Concerns

The refuge is home to over 500 species of wildlife, including over 300 species of birds and 14 endangered species. Although there are many opportunities for human conflict with wildlife, the refuge has two main categories of natural resource concerns that include compatibility with public use and NASA activities.

While most refuge visitors are respectful of the natural surroundings and wildlife habitats, the refuge has some problems with litter and some erosion at road shoulders. Other refuge resource problems include the increasing pressure to allow more boat traffic, especially on Mosquito Lagoon. This, coupled with the fishing pressures off Titusville roads leading to the refuge, is hurting migratory birds and manatee populations. The refuge is in the process of producing a Comprehensive Conservation Plan which includes a study of public use compatibility.

The refuge staff is often asked about the potential wildlife conflict with the activities of the space program at KSC. Early launches used an oxygen/hydrogen fuel, which had few long-term effects on the refuge. The new shuttle fuels, which are acid-based, may have more long-term effects on the already alkaline soil. Although the full effects of space launches are unknown, the refuge recognizes that NASA and the Department of Interior are partners in the ownership and management of the land.

Figure 6. Rattlesnake on Black Point Wildlife Drive



The KSC is very interested in helping the refuge educate the public about the wildlife and habitat management activities of the refuge. According to the KSC staff, visitors are always excited about wildlife viewing, but are not exposed to enough opportunities to engage in wildlife-related activities. The Comprehensive Conservation Plan process, in which the refuge is currently engaged, will determine if the refuge can support additional visitors.

3.4 Recreation Conditions, Issues and Concerns

The recreation opportunities on the refuge are limited to the activities off main refuge roads and a few hiking trails. The only wilderness access available is through the KSC Wildlife Tour, which uses non-public, KSC roads into the refuge. The recreational activities with the greatest pressure on the wildlife are fishing and, especially, boating.

■ 4.0 Planning and Coordination

4.1 Unit Plans

The refuge began a process to create a Comprehensive Conservation Plan in September 1999. From this effort, they will be better equipped to engage in activities which may include other local attractions or new or modified recreational uses on the refuge.

4.2 Public and Agency Coordination

The refuge works with the KSC, Canaveral National Seashore and the city of Titusville when necessary, but does not actively engage in regularly scheduled meetings. Refuge public outreach efforts are separate from public outreach activities of the agencies listed.

In addition to coordination efforts with Brevard County, the refuge works closely with the Brevard Nature Alliance, which sets standard for environmental education, including the use of trained guides for county nature tours. Groups such as the Brevard Nature Alliance pervade the local community, who is very much in favor of maintaining the environmental assets of the county in tact.

■ 5.0 Assessment of Need and System Options

5.1 Magnitude of Need

The Merritt Island NWR is in a unique position in that it is not an isolated attraction for visitors. The location of the refuge adjacent to the Kennedy Space Center and the Canaveral National Seashore presents challenges and opportunities that other refuges will not experience.

Within the refuge itself, the need for alternative transportation system is most prevalent on Wildlife Drive during peak-season weekends. The implementation of such a system should be studied in conjunction with the capacity of the refuge to accommodate more

people in the visitors center and on the refuge in addition to current visitors opinions on the value of a transit only Wildlife Drive.

The refuge has an opportunity to connect with other attractions on the island and reach a wider audience by offering a way to get to the refuge without using automobiles. The need for such a system would be dependent on other attractions in the area that would like to connect to the refuge and the refuge's willingness to accept more visitors.

5.2 Feasible Transit Alternatives

On the refuge itself, there is an opportunity to operate a loop shuttle from the visitor center to Wildlife Drive. For the shuttle to operate effectively, the route would need to accommodate stops on Wildlife Drive, in addition to providing an on-board interpreter. Wildlife Drive may need to be closed to automobile traffic during heavy visitation days to help the transit system to run on a regular schedule. Visitor capacity and parking issues at the visitor center will need to be addressed before any transit system is implemented.

Although the refuge places emphasis on preserving wildlife habitats rather than recreation, transit may help the refuge manage the pressures from the KSC and Canaveral National Seashore to provide connections to the refuge. Transit alternatives that may help the refuge manage an increase in visitation while providing a joint visitor experience may include:

- A loop tram or shuttle on Wildlife Drive (as described above);
- A shuttle system from the planned Titusville Visitor Center and outfitter business incubator to designated recreation areas on the refuge;
- A shuttle system from KSC to the refuge Visitor Center;
- A ferry shuttle and tour of wetlands with stops at Canaveral National Seashore, KSC and Titusville Space Walk; and
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■ 6.0 Bibliography

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<http://www.fws.gov/r4eao/wildlife/nwrmt.html>.

■ 7.0 Persons Interviewed

Jim Cahill, Canaveral National Seashore, District Ranger

Ron Hight, Merritt Island NWR, Complex Manager

Wesley Hoaglund, City of Titusville, Redevelopment Specialist

Norah Martinez, Canaveral National Seashore, Chief Ranger

Larry Mauk, NASA Public Affairs

B. Renee Ponik, NASA KSC Comprehensive Master Planning

Joy Riddell, Walk Florida, Pedestrian Safety Coordinator

Dorn Whitmore, Merritt Island NWR, Refuge Ranger